PIONEER

Service Manual

ORDER NO.
CRT-443-0

POWER AMPLIFIER FOR CAR STEREO

GM-A200 EW

SPECIFICATIONS

Power source	DC 14.4V (10.8~15.6V allowable)
Grounding system	Negative type
Max. current consumption	30A
Dimensions	240(W)×70(H)×270(D)mm
Weight	5.3kg (Cords for wiring not included)

Maximum power output	150W+150W
Continuous power output	84W+84W (1% dist. at 1kHz)
Load impedance	4Ω (4~8Ω allowable)
Frequency response	12~50,000Hz (±3dB)
Signal-to-noise ratio	100dB (IEC-A network, at 1W)
Distortion	0.02% (at 40W, 1kHz)
Input level	70mV/20kΩ

Note:
Specifications and the design are subject to possible modification without notice due to improvements.

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1. PARTS LOCATIONS

NOTE:

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ : GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

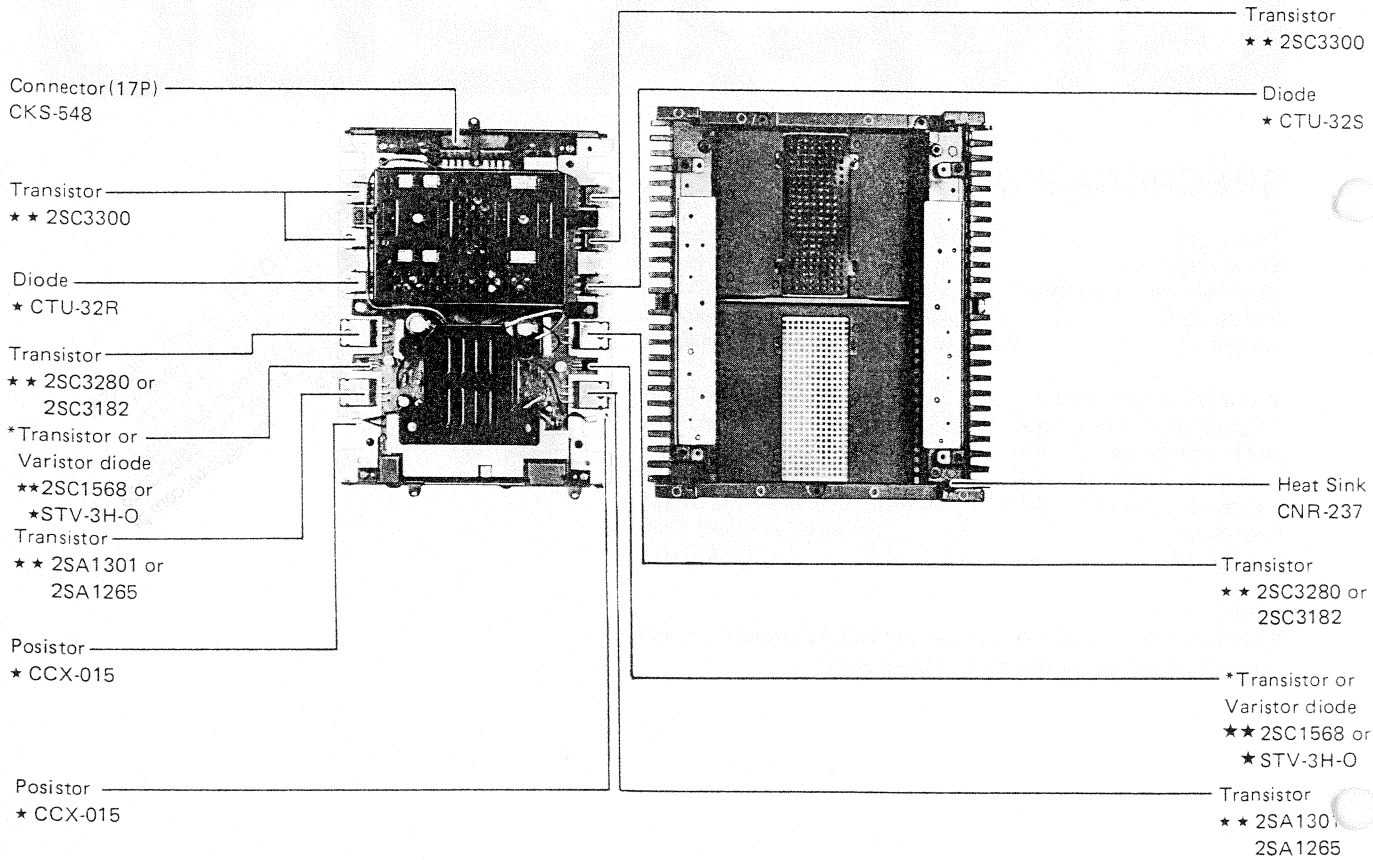


Fig. 1

Caution:
Parts marked with * are selected taking into account the rank of the transistor. See Table 2 on page 19 for details.

5. ADJUSTMENT

5.1 IDLE CURRENT ADJUSTMENT

- **Connection Diagram**

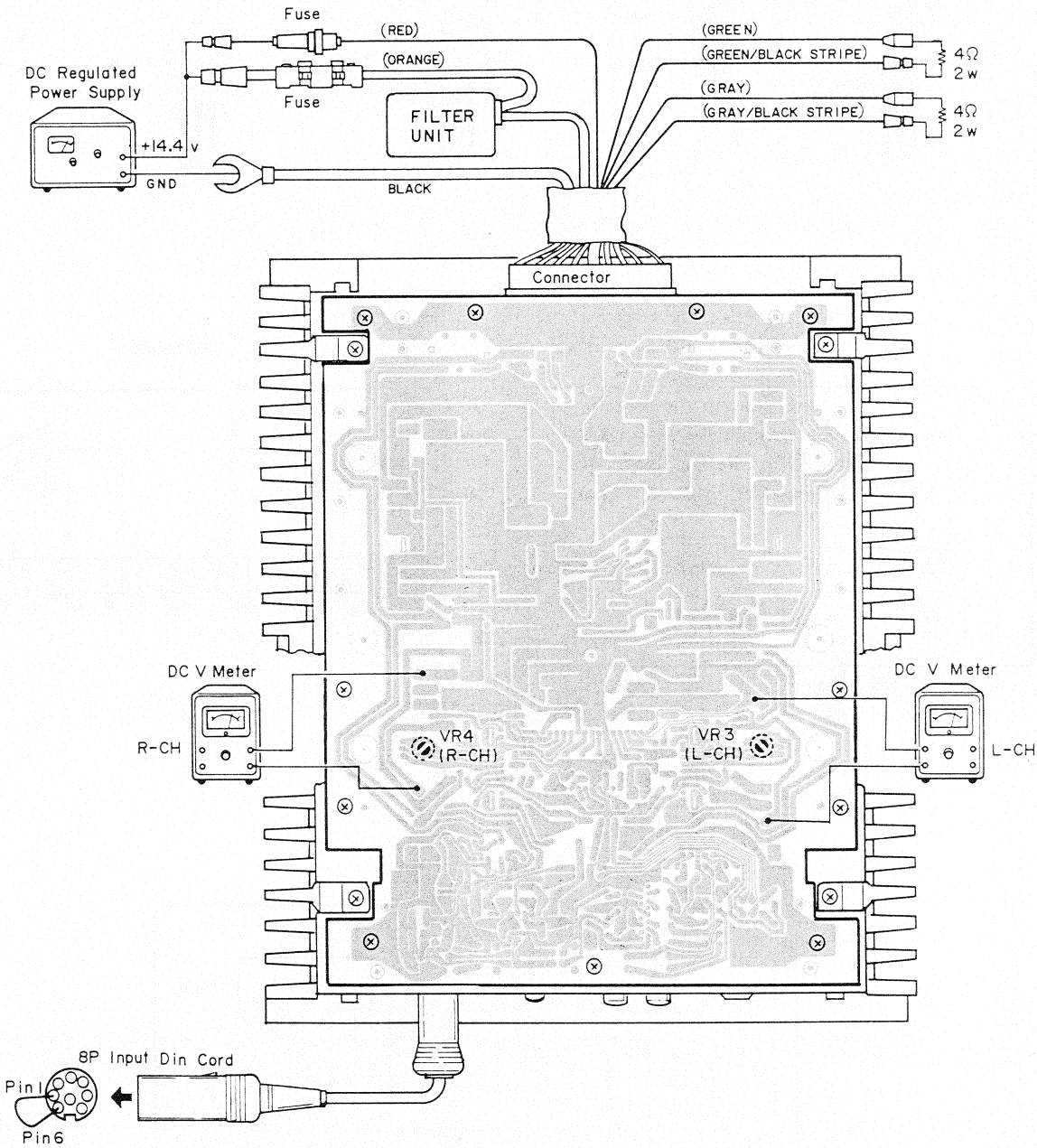


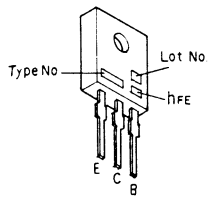
Fig. 12

- **To Adjust**

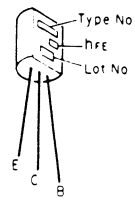
1. Adjust the semi-adjustable potentiometer VR's (Lch → VR3, Rch → VR4) so that you get a reading of 13 ~ 14mV on a DC Volt Meter
2. Wait for two to three minutes, and readjust the potentiometers.

• IC's and Transistors

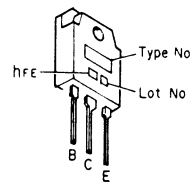
2SC1568



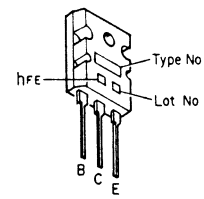
2SB562
2SB647A



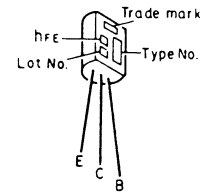
2SC3182
2SA1265
2SC3300



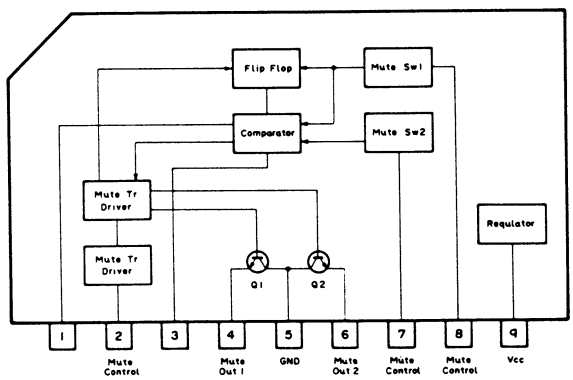
2SC3280
2SA1301



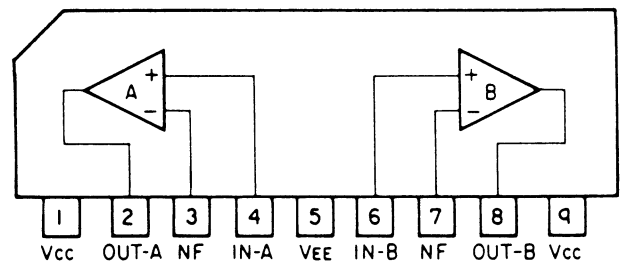
2SA683



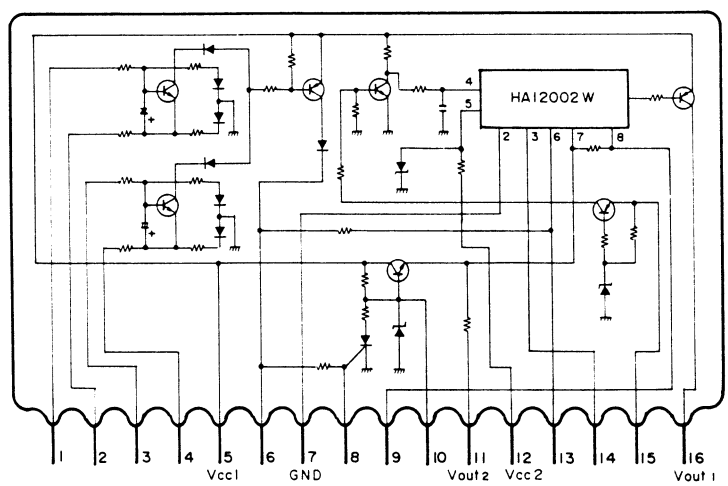
TA7362P



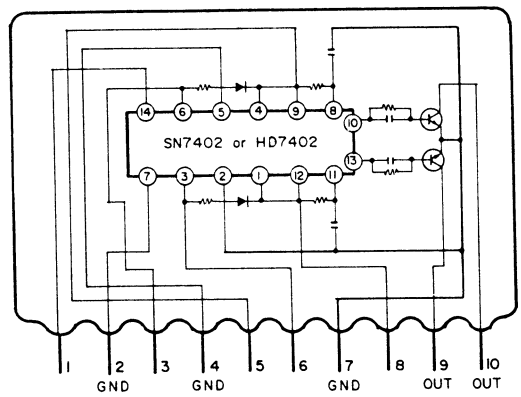
TA75558S



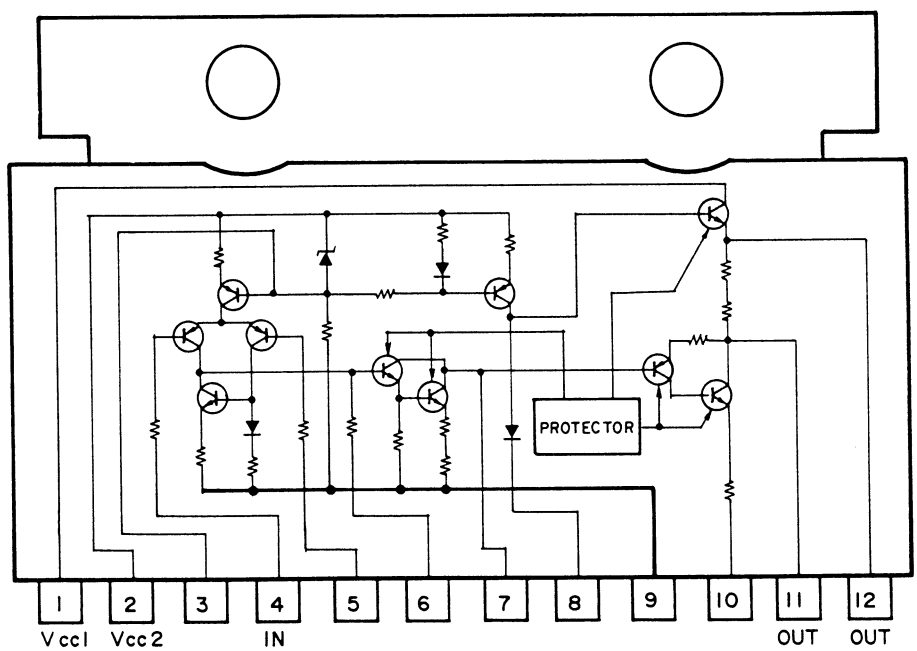
KHA112



KHA113

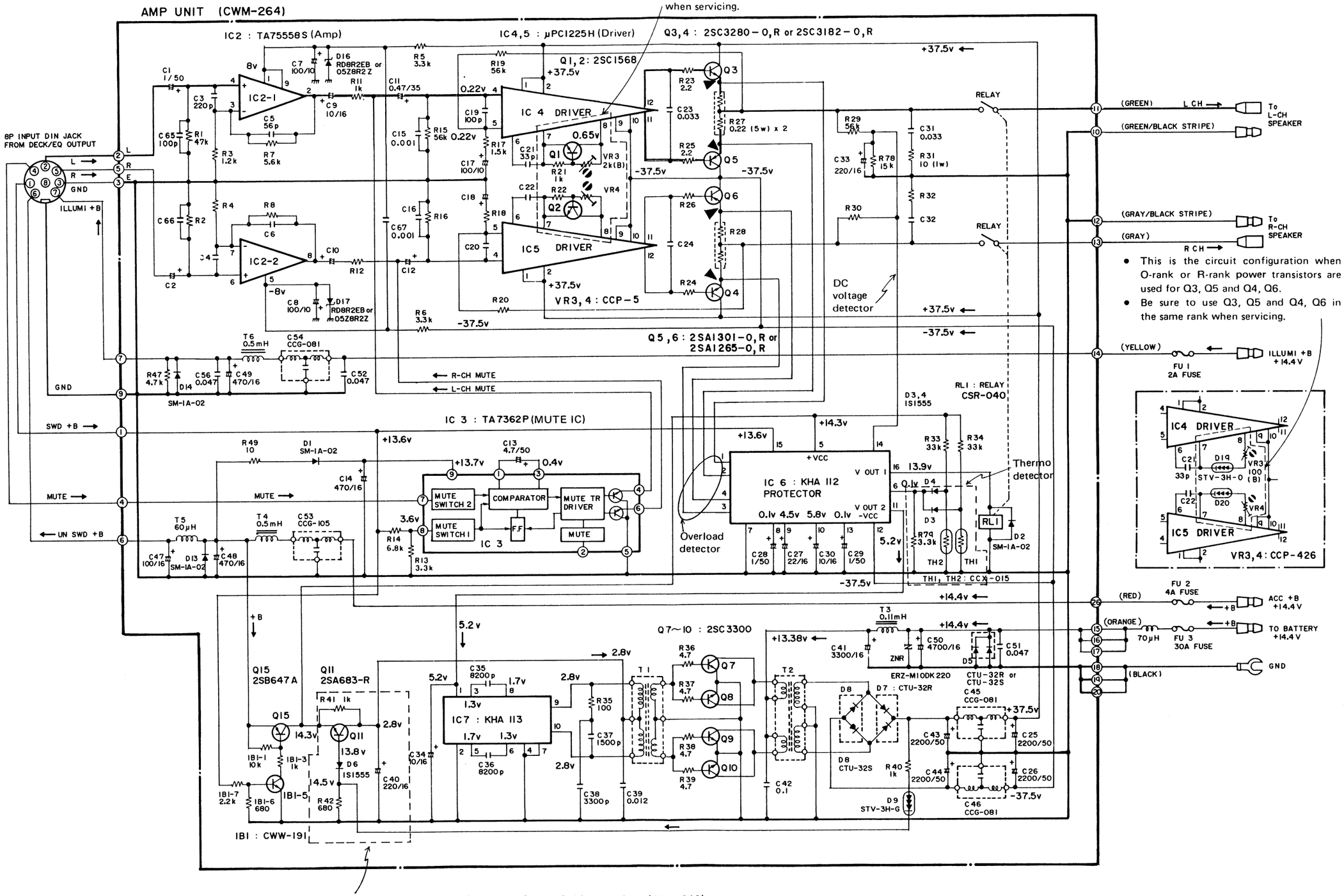


μPC1225H



6. SCHEMATIC CIRCUIT DIAGRAM

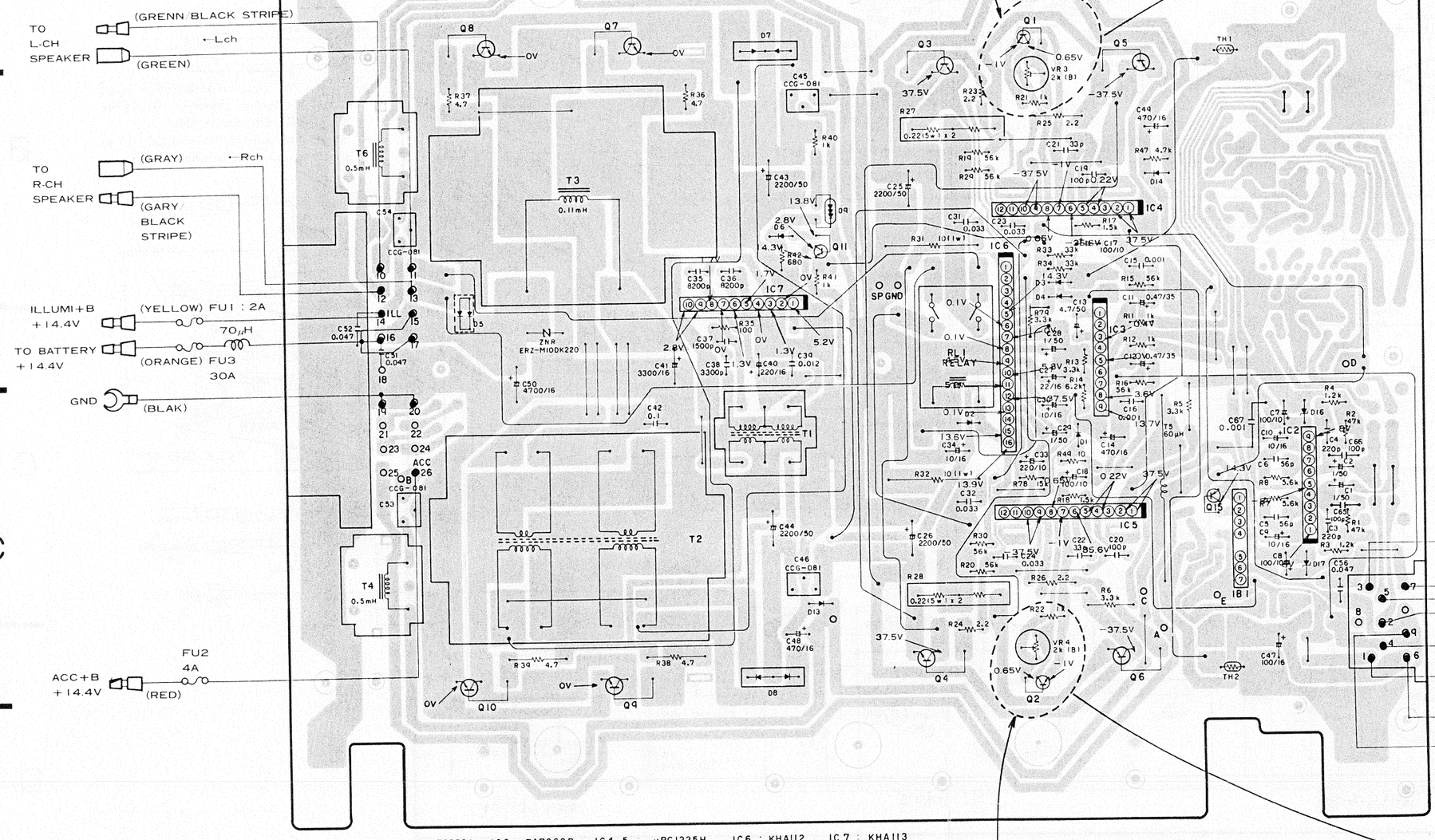
- This is the circuit configuration when R-rank power transistors are used for Q3, Q5 and Q4, Q6.
- Be sure to use Q3, Q5 and Q4, Q6 in the same rank when servicing.

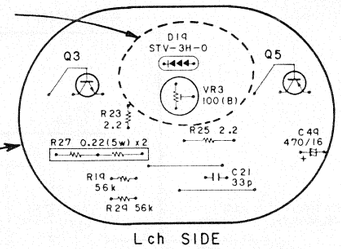


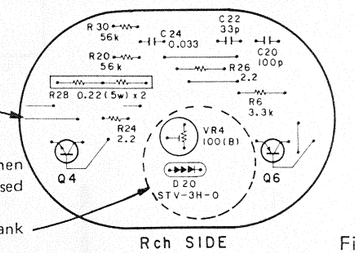
Circuit for drive control of the base of the switching transistor (Q7 ~ Q10)

Fig. 13

7. CONNECTION DIAGRAM







IC2 : TA75558S IC3 : TA7362P IC4, 5 : μPC1225H IC6 : KHA112 IC7 : KHA113
Q1, 2 : 2SC1568 Q3, 4 : 2SC3280-O, R or 2SC2581-O, R Q5, 6 : 2SA1301-O, R or 2SA1106-O, R Q7~10 : 2SC3300 Q11 : 2SA683-R Q15 : 2SB647A
D1, 2, 13, 14 : SM-1A-02 D3, 4, 6 : 1S1555 D5 : CTU-32R or CTU-32S D7 : CTU-32R D8 : CTU-32S D9 : STV-3H-G D16, 17 : RD8R2EB or 05Z8R2Z D19, D20: STV-3H-O

- This is the circuit configuration when R-rank power transistors are used for Q3, Q5.
- Be sure to use Q3, Q5 in the same rank when servicing.

- This is the circuit configuration when O-rank or R-rank power transistors are used for Q3, Q5.
- Be sure to use Q3, Q5 in the same rank when servicing.

- This is the circuit configuration when R-rank power transistors are used for Q4, Q6.
- Be sure to use Q4, Q6 in the same rank when servicing.

- This is the circuit configuration when O-rank or R-rank power transistors are used for Q4, Q6.
- Be sure to use Q4, Q6 in the same rank when servicing.

Fig. 14

8. CABINET EXPLODED VIEW

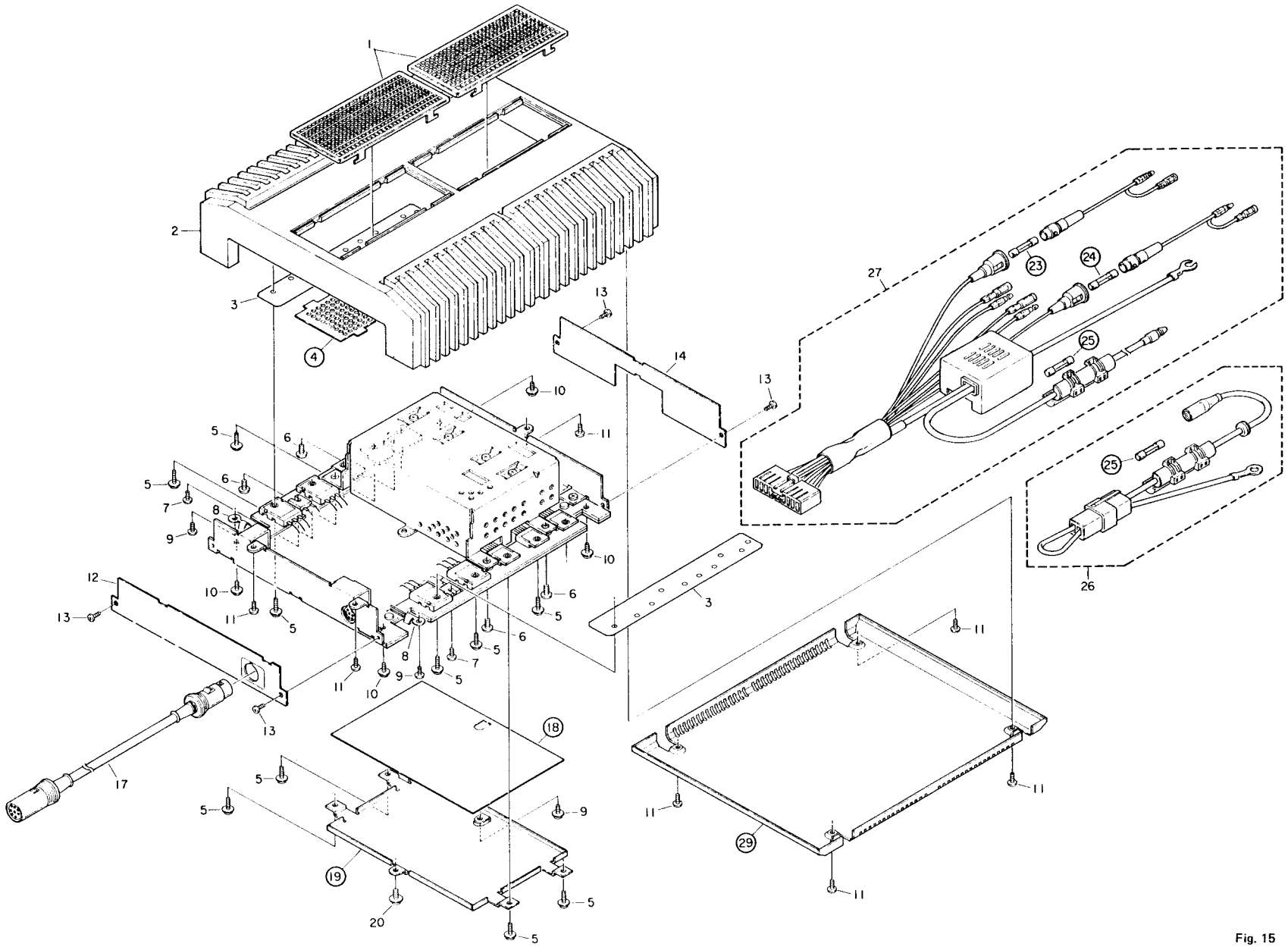


Fig. 15

9. AMP UNIT EXPLODED VIEW

- **Amp Unit (CWM-264)**
- **Parts List**

NOTE:

- *For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.*
  ★★ : GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*

Mark	No.	Part No.	Description
	1.	BMZ30P050FZK	Screw
	2.		Shield
	3.		Heat sink
	4.	CBM-030	Rivet
★★	5.	2SC 3300	Transistor
	6.	CTU-32R	Diode
★★	*7.		Transistor (See Caution 1)
★★	*8.		Transistor or
★			Varistor diode (See Caution 2)
★★	*9.		Transistor (See Caution 1)
	*10.		Holder (See Caution 1)
	11.	VACANT	
	12.	VACANT	
	13.		Shield
	14.	BMZ30P050FMC	Screw
	15.	VACANT	
	16.	VACANT	
	17.	CKS-549	Connector
	18.	VACANT	
	19.		Bracket (FRONT)
	20.	VACANT	
	21.	μPC1225H	IC
	22.	CSR-040	Relay
	23.	CTF-237	Transformer
	24.	CTH-089	Transformer
★	25.	CTU-32S	Diode
	*26.		Holder (See Caution 1)
	27.	CKS-548	Connector (17P)
	28.		Bracket (REAR)
	29.		Holder

Caution 1:

- The holders of *10 and *26 depend on the power transistors of *7 and *9.
- Combination other than those in the following tables is impossible because of different dimensions of the power transistors.

Table 1-1(L ch)

*10 \	*7	*9
CNG-641	2SC3280	2SA1301
CNG-713	2SC3182	2SA1265

Table 1-2(R ch)

*26 \	*7	*9
CNG-642	2SC3280	2SA1301
CNG-714	2SC3182	2SA1265

Caution 2:

- O-rank power transistors accept only STV-3H-O as shown below.

Table 2

*8 \	*7	*9
2SC1568 or STV-3H-O	2SC3280-R or 2SC3182-R	2SA1301-R or 2SA1265-R
STV-3H-O	2SC3280-O or 2SC3182-O	2SA1301-O or 2SA1265-O

• Parts List

NOTE:

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  ★★: GENERALLY MOVES FASTER THAN ★.
  This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.
- *Parts whose parts numbers are omitted are subject to being not supplied.*

Mark	No.	Part No.	Description
	1.	CNB-866	Case
	2.	CNR-237	Heat Sink
	3.	CNN-293	Insulator
	4.		Insulator
	5.	AMZ30P140FMC	Screw
	6.	BMZ40P080FMC	Screw
	7.	BMH30P080FMC	Screw
★	8.	CCX-015	Posistor
	9.	BMZ30P050FMC	Screw
	10.	AMZ30P080FMC	Screw
	11.	BMZ30P050FZK	Screw
	12.	CNK-290	Panel
	13.	BMZ26P040FMC	Screw
	14.	CNK-278	Panel
	15.	VACANT	
	16.	VACANT	
	17.	CDF-986	Connector
	18.		Insulator
	19.		Shield plate
	20.	BMZ40P060FMC	Screw
	21.	VACANT	
	22.	VACANT	
	23.		Fuse, 2A
	24.		Fuse, 4A
	25.		Fuse, 30A
	26.	CDF-985	Cord
	27.	CDK-046	Cord
	28.	VACANT	
	29.		Case

• Amp Unit

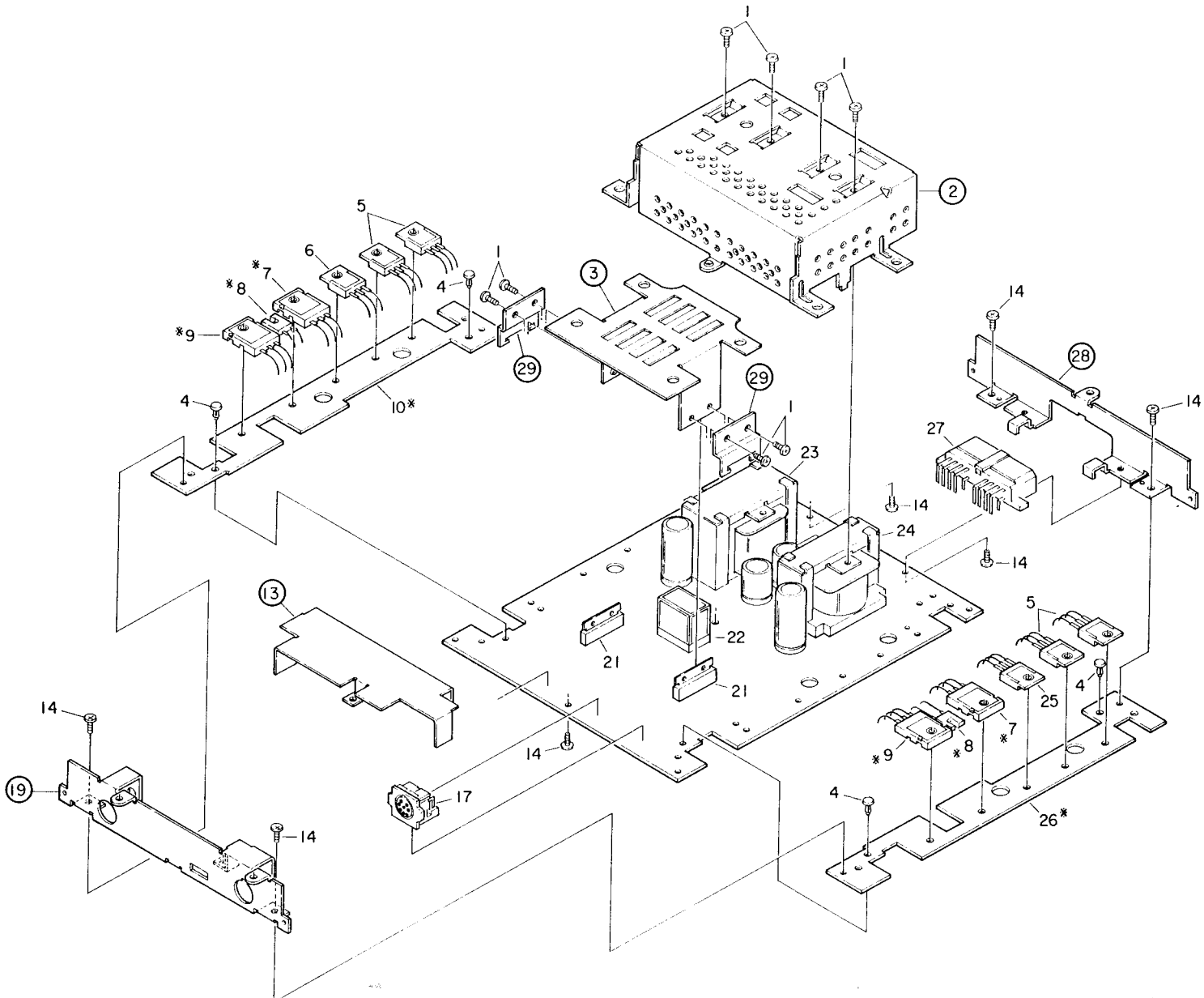

Fig. 16

CAPACITORS

Mark	Symbol & Description	Part No.
	C1, C2, C28, C29	CEA010M50L2
	C3, C4	CCDSL221J50
	C5, C6	CCDSL560J50
	C7, C8, C17, C18, C9, C10	CEA101M10L2
		CEA100M16L2
	C11, C12	CSZAR47M35
	C13	CEA4R7M50L2
	C14, C48, C49	CEA471M16L2
	C15, C16	CCDSL102K50
	C19, C20	CCDSL101J50
	C21, C22	CCDSL330J50
	C23, C24, C31, C32	CQMA333K50L
	C25, C26	CEA222M50L2
	C27	CEA220M16L2
	C30, C34	CEA100M16L2
	C33	CEA221M10L2
	C35, C36	CQMA822K50L
	C37	CQMA152K50L
	C38	CQMA332K50L
	C39	CQMA123K50L
	C40 220μF/16V	CCH-118
	C41 3300μF/16V	CCH-119
	C42	CQMA104K50L
	C43, C44 2200μF/50V	CCH-121
	C45, C46, C54	CCG-081
	C47	CEA101M16L2
	C50 4700μF/16V	CCH-120
	C51, C52, C56	CKDYF473Z50
	C53	CCG-105
	C65, C66	CKDYB101K50
	C67	CKDYB102K50

Caution:

- This is the circuit configuration when R-rank power transistors are used for Q3, Q5 and Q4, Q6.
- Be sure to use Q3, Q5 and Q4,Q6 in the same rank when servicing.

	Q1, Q2	VR3, VR4	D19, D20	R21, R22
Q3, Q5: R-rank	2SC1568	CCP-425 (2kΩ)		1kΩ
Q4, Q6: R-rank	2SC1568	CCP-425 (2kΩ)		1kΩ

Caution:

- This is the circuit configuration when O-rank or R-rank power transistors are used for Q3, Q5 and Q4, Q6.
- Be sure to use Q3,Q5 and Q4,Q6 in the same rank when servicing.

	Q1, Q2	VR3, VR4	D19, D20	R21, R22
Q3, Q5: O-rank or R-rank		CCP-426 (100Ω)	STV-3H-O	
Q4, Q6: O-rank or R-rank		CCP-426 (100Ω)	STV-3H-O	

R-rank, O-rank: hfe rank. See page 10.

10. ELECTRIC PARTS LIST

NOTE:
When ordering resistors, first convert resistance values into code form as thown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 X 10^1*	*561*	*RD1/4PS 5 6 1 J*
47kΩ	*47 X 10^3*	*473*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5*		*RN2H 0 R 5 K*
1Ω	*010*		*RS1P 0 1 0 K*

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62KΩ	*562 X 10^1*	*RN1/4SR 5 6 2 1 F*

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Amp Unit (CWM-264)

MISCELLANEOUS

Be sure to use Q7 through Q10 in the same rank.

Mark	Symbol & Description	Part No.
★★	IC1	VACANT
★★	IC2	TA75558S
★★	IC3	TA7362P
★★	IC4, IC5	μPC1225H
★★	IC6	KHA112
★★	IC7	KHA113
★★	Q1, Q2	2SC1568
★★	Q3, Q4	2SC 3182 or 2SC 3280
★★	Q5, Q6	2SA 1265 or 2SA 1301
★★	Q7–Q10	2SC 3300
★★	Q11	2SA 683-R
★★	Q13	2SB 562
★★	Q15	2SB 647A
★	D1, D2, D13, D14	SM-1A-02
★	D3, D4, D6	1S 1555
★	D5	CTU-32R or CTU-32S
★	D7	CTU-32R
★	D8	CTU-32S
★	D9	STV-3H-G
★	D10–D12, D15	VACANT
★	D16, D17	RD8R2EB or 05Z8R2Z
★	D18	VACANT
★	D19, D20	STV-3H-O
	T1	Transformer
	T2	Transformer
	T3	Choke Transformer
	T4, T6	Coil
	T5	Coil
★	TH1, TH2	Posistor
	RL1	Relay
★★	VR3, VR4	Semi-fixed, 2kΩ(B)
★★	VR3, VR4	Semi-fixed, 100Ω
	IB1	
	ZNR	

RESISTORS

Mark	Symbol & Description	Part No.
	R1–R4, R7–R24, R29, R30, R33–R35, R40–R42, R47, R49, R78, R79	RD1/4VM□□□J
	R5, R6, R25, R26	RD1/4PM□□□J
	R27, R28	CCN-136
	R31, R32	RS1P□□□J
	R36–R39	RD1/2PS□□□J
	R43–R46, R48, R50–R76	VACANT

10. ELECTRIC PARTS LIST

NOTE:

When ordering resistors, first convert resistance values into code form as thown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J = 5%, and K = 10%).

560Ω	*56 X 10^1*	*561 . . . . . .*	*RD1/4PS 5 6 1 J*
47kΩ	*47 X 10^3*	*473 . . . . . .*	*RD1/4PS 4 7 3 J*
0.5Ω	*0R5 . . . . . .*		*RN2H 0 R 5 K*
1Ω	*010 . . . . . .*		*RS1P 0 1 0 K*

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62KΩ 562 X 10^1 . . . . . .RN1/4SR 5 6 2 1 F

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- *Parts whose parts numbers are omitted are subject to being not supplied.*

Amp Unit (CWM-264)

MISCELLANEOUS

Be sure to use Q7 through Q10 in the same rank.

Mark	Symbol & Description	Part No.
★★	IC1	VACANT
★★	IC2	TA75558S
★★	IC3	TA7362P
★★	IC4, IC5	μPC1225H
★★	IC6	KHA112
★★	IC7	KHA113
★★	Q1, Q2	2SC1568
★★	Q3, Q4	2SC 3182 or 2SC 3280
★★	Q5, Q6	2SA 1265 or 2SA 1301
★★	Q7–Q10	2SC 3300
★★	Q11	2SA 683-R
★★	Q13	2SB 562
★★	Q15	2SB 647A
★	D1, D2, D13, D14	SM-1A-02
★	D3, D4, D6	1S 1555
★	D5	CTU-32R or CTU-32S
★	D7	CTU-32R
★	D8	CTU-32S
★	D9	STV-3H-G
★	D10–D12, D15	VACANT
★	D16, D17	RD8R2EB or 05Z8R2Z
★	D18	VACANT
★	D19, D20	STV-3H-O

Mark	Symbol & Description		Part No.
	T1	Transformer	CTH-088
	T2	Transformer	CTH-089
	T3	Choke Transformer	CTF-237
	T4, T6	Coil	CTF-238
	T5	Coil	CTF-104
★	TH1, TH2	Posistor	CCX-015
	RL1	Relay	CSR-040
★★	VR3, VR4	Semi-fixed, 2kΩ(B)	CCP-425
★★	VR3, VR4	Semi-fixed, 100Ω	CCP-426
	IB1		CWW-191
	ZNR		ERZ-M10DK220

RESISTORS

Mark	Symbol & Description	Part No.
	R1–R4, R7–R24, R29, R30, R33–R35, R40–R42, R47, R49, R78, R79	RD1/4VM□□□J
	R5, R6, R25, R26	RD1/4PM□□□J
	R27, R28	CCN-136
	R31, R32	RS1P□□□J
	R36–R39	RD1/2PS□□□J
	R43–R46, R48, R50–R76	VACANT